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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/558,947	11/30/2005	Yusuke Konagai	YAMA:110	6641
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EXAMINER MONIKANG, GEORGE C				
ART UNIT 2615		PAPER NUMBER		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/558,947

Applicant(s)

KONAGAI, YUSUKE

Examiner

GEORGE C. MONIKANG

Art Unit

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 April 2008.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-3 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 10/558947.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SG/IC)
Paper No(s)/Mail Date See Continuation Sheet
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :6/20/2008, 4/21/2008, 4/9/2008, 12/19/2007, 12/13/2006, 12/13/2006, 7/21/2006.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 4/9/2008 have been fully considered but they are not persuasive.
2. With regards to applicant's arguments that Satoh et al fail to disclose driving the low frequency components at the same weight. The examiner maintains his stand. Satoh et al discloses outputting signals in the front left, front right, rear left and rear right after input signals have been processed by the same processor (Satoh et al, fig. 1: the signals in all frequency range (thus including the low frequency range) go through the same processing, thus have equivalent gain).
3. With regards to applicant's argument that Doidic et al fails to disclose not applying time difference to the low frequency components, the examiner maintains his stand. Doidic did not apply time difference since Doidic processed the signals in real time (Doidic et al, col. 6, lines 8-15).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al, JP 5-103391 A, in view of Sasaki et al, JP 9-233591 and further in view of Oinoue et al, US Patent 7,113,602 B2. (The Tanaka et al and Sasaki et al reference are cited in IDS filed 7/21/2006)

4. Re Claim 1, Tanaka et al discloses an array speaker system comprising: an array speaker (page 1: purpose), control circuit that imparts a relatively large weight to the center speaker unit and relatively small weights to peripheral speaker units in the array speaker (page 1: constitution), but fails to disclose having a plurality of speaker units arranged in an array including at least one center speaker unit and a plurality of peripheral speaker units (Sasaki et al, page 1: solution; fig), for emitting audio signal beams with predetermined time differences therebetween so as to control sound directivity. However, Sasaki et al does (Sasaki et al, page 1: solution). The combined teachings of Tanaka et al and Sasaki et al also fail to disclose wherein a control circuit imparts weights are reduced with respect to low-frequency components of input audio signals in comparison with differences between the weights applied to high-frequency

components. However, Oinoue et al does (*Oinoue et al, col. 5, line 59 through col. 6, line 4*).

5. Taking the combined teachings of Tanaka et al, Sasaki et al and Oinoue et al as a whole, one skilled in the art would have found it obvious to modify array speaker system comprising: an array speaker (*page 1: purpose*), control circuit that imparts a relatively large weight to the center speaker unit and relatively small weights to peripheral speaker units in the array speaker (*page 1: constitution*) of Tanaka et al with a plurality of speaker units arranged in an array including at least one center speaker unit and a plurality of peripheral speaker units (*Sasaki et al, page 1: solution: fig*), for emitting audio signal beams with predetermined time differences therebetween so as to control sound directivity as taught in Sasaki et al (*Sasaki et al, page 1: solution*) with a control circuit imparts weights are reduced with respect to low-frequency components of input audio signals in comparison with differences between the weights applied to high-frequency components as taught in Oinoue et al (*Oinoue et al, col. 5, line 59 through col. 6, line 4*) to give the speaker array a more enhanced sound effect and also so a similar sound directivity distribution be applied to both high-frequency and low frequency sounds equally.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al, JP 5-103391 A, in view of Sasaki et al, JP 9-233591 and further in view of Satoh et al, US Patent 5,146,507.

7. Re Claim 2, Tanaka et al discloses an array speaker system comprising: an array speaker (page 1: purpose), control circuit that imparts a relatively large weight to the center speaker unit and relatively small weights to peripheral speaker units in the array speaker (page 1: constitution), but fails to disclose having a plurality of speaker units arranged in an array including at least one center speaker unit and a plurality of peripheral speaker units (Sasaki et al, page 1: solution: fig), for emitting audio signal beams with predetermined time differences therebetween so as to control sound directivity. However, Sasaki et al does (Sasaki et al, page 1: solution). The combined teachings of Tanaka et al and Sasaki et al also fail to disclose wherein the control circuit imparts, with respect to low-frequency components of the input audio signals, a same weight to all of the center speaker units and all of the peripheral speaker units in the array speaker. However, Satoh et al does (Satoh et al, fig. 1: the signals in all frequency range (thus including the low frequency range) go through the same processing, thus have equivalent gain).

8. Taking the combined teachings of Tanaka et al, Sasaki et al and Satoh et al as a whole, one skilled in the art would have found it obvious to modify an array speaker system comprising: an array speaker (page 1: purpose), control circuit that imparts a relatively large weight to the center speaker unit and relatively small weights to peripheral speaker units in the array speaker (page 1: constitution) of Tanaka et al with a plurality of speaker units arranged in an array including at least one center speaker unit and a plurality of peripheral speaker units (Sasaki et al, page 1: solution: fig), for emitting audio signal beams with predetermined time differences therebetween so as to

control sound directivity. However, Sasaki et al does (*Sasaki et al, page 1: solution*) with a control circuit imparting, with respect to low-frequency components of the input audio signals, a same weight to all of the center speaker units and all of the peripheral speaker units in the array speaker as taught in Satoh et al (*Satoh et al, fig. 1: the signals go through the same processing, thus have equivalent gain*) to give the speaker array a more enhanced sound effect and also to improve the sound directivity.

9. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al, JP 5-103391 A, in view of Sasaki et al, JP 9-233591 in view of Doidic et al, US Patent 5,789,689 and further in view of Oinoue et al, US Patent 7,113,602 B2.

10. Re Claim 3, Tanaka et al discloses an array speaker system comprising: an array speaker (*page 1: purpose*), control circuit that imparts a relatively large weight to the center speaker unit and relatively small weights to peripheral speaker units in the array speaker (*page 1: constitution*); but fails to disclose having a plurality of speaker units arranged in an array including at least one center speaker unit and a plurality of peripheral speaker units (*Sasaki et al, page 1: solution; fig*), for emitting audio signal beams with predetermined time differences therebetween so as to control sound directivity. However, Sasaki et al does (*Sasaki et al, page 1: solution*). The combined teachings of Tanaka et al and Sasaki et al fail to disclose a circuit that divides the input audio signals are divided into three frequency bands including low-frequency components, intermediate-frequency components, and high-frequency components (*Doidic et al, col. 3, lines 1-10*); and a control circuit that imparts, with respect to the

intermediate-frequency components of the input audio signals, weights at reduced differences between the weight imparted to the center speaker unit and the weights imparted to the peripheral speaker units in the array speaker are same weight is imparted to all of the center speaker unit and all of the peripheral speaker units in the array speaker (*Doidic et al, col. 3, lines 1-10: signals go through the same processing*), and wherein the control circuits imparts, with respect to low-frequency components of the input audio signals, a same weight is imparted to all the center speaker unit and the peripheral speaker units in the array speaker without applying the time differences to the speaker units (*Doidic et al, col. 3, lines 1-10: signals go through the same processing*), *Doidic et al, col. 6, lines 8-15*). However, Doidic et al does.

11. Taking the combined teachings of Tanaka et al, Sasaki et al and Doidic et al as a whole, one skilled in the art would have found it obvious to modify the array speaker system comprising: an array speaker (*page 1: purpose*), control circuit that imparts a relatively large weight to the center speaker unit and relatively small weights to peripheral speaker units in the array speaker (*page 1: constitution*) of Tanaka et al with a plurality of speaker units arranged in an array including at least one center speaker unit and a plurality of peripheral speaker units (*Sasaki et al, page 1: solution; fig*), for emitting audio signal beams with predetermined time differences therebetween so as to control sound directivity as taught in Sasaki et al (*Sasaki et al, page 1: solution*) with the input audio signals are divided into three frequency bands including low-frequency components, intermediate-frequency components, and high-frequency components (*Doidic et al, col. 3, lines 1-10*); and a control circuit that imparts, with respect to the

intermediate-frequency components of the input audio signals, weights at reduced differences between the weight imparted to the center speaker unit and the weights imparted to the peripheral speaker units in the array speaker are same weight is imparted to all of the center speaker unit and all of the peripheral speaker units in the array speaker (*Doidic et al, col. 3, lines 1-10: signals go through the same processing*), and wherein the control circuits imparts, with respect to low-frequency components of the input audio signals, a same weight is imparted to all the center speaker unit and the peripheral speaker units in the array speaker without applying the time differences to the speaker units (*Doidic et al, col. 3, lines 1-10: signals go through the same processing, Doidic et al, col. 6, lines 8-15*) as taught in Doidic et al to give the speaker array a more enhanced sound effect and to give the user control over various parameters and also so a similar sound directivity distribution be applied to both high-frequency and low frequency sounds equally.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GEORGE C. MONIKANG whose telephone number is (571)270-1190. The examiner can normally be reached on M-F. alt Fri. Off 7:30am-5:00pm (est).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Examiner, Art Unit 2615

/Vivian Chin/

Supervisory Patent Examiner, Art Unit 2615